Part 1 : System Management.

Ch 1. Dimensions of Logistics.

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Definitions of Logistics.

American Heritage Dictionary.

The aspect of military operations that deals with the procurement, distribution, maintenance and replacement of materials and personnel.


The detailed coordination of complex operations involving many people, facilities, and supplies.
Definitions.

- That part of the supply chain process that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customers' requirements.
Activities.

- **Physical Supply.**
  Demand Forecasting, Order Processing, Procurement, Inventory Management, Transportation/Flow, Information Flow.

- **Manufacturing.**
  Production Planning, Purchasing, Material Handling, Inventory Management, Packaging/Shipping, Information Flow.

- **Physical Distribution.**
Activities.

Supply Chain and Supply Chain Management (SCM).

- **Supply Chain (SC).**
  A set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flow of products, services, finances, and/or information flow from a source to a customer.

- **Supply Chain Management (SCM).**
  The systematic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across business within the supply chain, for the purpose of improving the long-term performance of the individual companies and the supply chain as a whole.
Integrated Logistics Support (ILS).

- In the mid-1960s.
  A composite of all support considerations necessary to assure the effective and economical support of a system or equipment at all levels of maintenance for its programmed life cycle. It is an integral part of all other aspects of system acquisition and operation.

- Expanded Concept of ILS: Design for Supportability.
  A disciplined, unified, and iterative approach to the management and technical activities necessary to (1) integrate support considerations into system and equipment design; (2) develop support requirements that are related consistency to readiness objectives, to design, and to each other; (3) acquire the required support; and (4) provide the required support during the operational phase at minimum cost.
Integrated Logistics Support (ILS).

- Acquisition Logistics.
  A multi-functional technical management discipline associated with the design, development, test, production, fielding, sustainment, and improvement modifications of cost-effective systems that achieve the user's peacetime and wartime readiness requirements.

The principal objectives of acquisition logistics are to ensure that support considerations are an integral part of the system's design requirements, that the system can be cost-effectively supported throughout its life cycle, and that the infrastructure elements necessary to the initial fielding and operational support of the system are identified and developed and acquired.
The Elements of Logistics.

The Elements of Logistics.

- Logistics and maintenance support planning.
- Logistics, maintenance, and support personnel.
- Training and training support.
- Supply support - spare/repair parts and associated inventories.
- Computer resources (hardware and software).
- Technical data, reports, and documentation.
- Maintenance and support facilities and utilities.
- Logistics and maintenance support planning.
- Packaging, handling, storage/warehousing, and transportation.
- Test, measurement, handling, and support equipment.
- Logistics information.
Logistics and Maintenance Support Planning.

- The establishment of requirements for logistics and the overall support of the system throughout its life cycle.

- Maintenance Planning.
  - The definition of the maintenance concept (in the conceptual design phase)
  - Supportability Analysis (in the preliminary and detail design phase)
    1. Maintenance Task Analysis (MTA)
    2. Level of Repair Analysis (LROA)
    3. FMECA/FTA.
    4. Reliability Centered Maintenance (RCM)
    5. Transportation Analysis.
    7. Logistics Modeling.

- Personnel required to perform unique logistics and system maintenance activities included in this category.

Activities.

- The initial provisioning and procurement of items of support.
- Production related logistics functions.
- The installation and checkout of the system and its elements at the user's operational site.
- Customer service functions.
- The sustaining support of the system throughout its planned period of use.
- Functions required for the retirement and recycling/disposal of materials.
- Personnel at all levels of maintenance, mobile teams, and operators /maintainers at special test facilities and calibration laboratories.
Training and Training Support.

- All personnel, equipment, facilities, data/documentation, and associated resources necessary for the training of operational and maintenance personnel.

Supply Support.

- This element includes all spares, repair parts, consumables, special supplies, and related inventories needed to maintain the prime system and its maintenance.
- Spares/repair parts are required throughout the system operational phase and in support of the retirement and recycle/disposal of system components.
Computer Resources.

- All computers, associated software, connecting components, networks, and interfaces.
  - The day-to-day flow of information for all logistics functions.
  - Schedule and unschedule maintenance activities.
  - Special monitoring and reporting requirement.

Technical Data, Reports and Documentation.

- Technical data may include:
  - System installation and checkout procedures,
  - Operating and maintenance instructions,
  - Inspection and calibration procedures, overhaul instructions, facilities data, system modification instructions, engineering design data, and so on.
The Elements of Logistics.

Maintenance and Support Facilities and Utilities.

- All special facilities that are unique and are required to support logistics activities.
  - Storage building and warehouse and maintenance facilities at all levels.
  - Physical plant, portable buildings, mobile vans, personnel housing structures, intermediate-level maintenance shops, calibration laboratories, and special repair shops.

Packaging, Handling, Storage/Warehousing, and Transportation

- All materials, equipment, special provisions, containers, and supplies.
  - To support the packaging, safety and preservation, storage, handling, and/or transportation of the prime mission-related elements of the system, personnel, spares and repair parts, test and support equipment, technical data, computer resources, and mobile facilities.
The Elements of Logistics.

Test, Measurement, Handling, and Support Equipment.
- All tools, condition monitoring equipment, diagnostic and checkout equipment, special test equipment, metrology and calibration equipment, maintenance fixtures and stands, and special handling equipment.

Logistics Information.
- The resources necessary to ensure that an effective and efficient logistics information flow.
  - The necessary communication link among the customer, producer, subcontractors, suppliers, and supporting maintenance organizations.
  - The utilization of the latest EC methods, EDI capabilities, e-mail, and the Internet.
Value-added Role of Logistics.

Source: Center for Supply Research, Penn State University.
Value-added Role of Logistics.

Form Utility.
Form utility refers to the value added to goods through a manufacturing, production, or assembly process. For example, form utility results when raw materials are combined in some predetermined manner to make a finished product.

Place Utility.
Logistics provides place utility by moving goods from production surplus points where demand exists. Logistics extends boundaries of the market area, thus adding economic value to the goods.
Value-added Role of Logistics.

**Time Utility.**

Not only must goods and services be available where consumers need them, but they must also be at that point when customers demand them. This is called time utility, or the economic value added to a good or service by having it at a demand point at a specific time.

**Possession Utility.**

Possession utility is primarily created through the basic marketing activities related to the promotion of products or services. We may define promotion as the effort, through direct and indirect contact with the customer, to increase the desire to possess a good or to benefit from a service.
Logistics Management.

Definition.

Logistics management is that part of the supply chain process that plans, implements and controls the efficient, effective flow and storage of goods, services and related information from the point-of-origin to the point-of-consumption in order to meet customer's requirements.

(The Council of Logistics Management)
Logistics Management

Management Actions
- Planning
- Implementation
- Control

Input into Logistics
- Natural Resources (land, facilities and equipment)
- Human Resources
- Financial Resources
- Information Resources

Logistics Management
- Raw material
- In-process
- Inventory
- Finished Goods

Logistics Activities
- Customer Service
- Demand Forecasting
- Inventory Management
- Logistics Communications
- Materials Handling
- Order Processing
- Packaging
- Parts and Service Support
- Plant and Warehouse Site Selection
- Procurement
- Reverse Logistics
- Traffic Logistics
- Warehousing and Storage

Output of Logistics
- Competitive Advantage
- Marketing Orientation and Operational Efficiencies and Effectiveness
- Time and Place Utility
- Efficient Movement to Customer
- Proprietary Asset
Performance Check.

1. Successful supply chain integration is based upon achieving with objectives?
   I. Recognizing the final customer's service level requirement.
   II. Deciding where to position inventories along the supply chain and how much to stock at each point.
   III. Developing appropriate policies and procedures for managing the supply chain as a single entity.
   IV. Using JIT concept for eliminating waste in production, distribution and purchasing areas.

2. What logistics activity involves the movement of goods into a warehouse, the strategic placement of goods in the warehouse, and the movement of goods from storage to other picking and packing areas and eventually to dock areas for transportation out of the warehouse?
   A. Material handling.                                B. Physical distribution.

3. Elements of logistic support include all EXCEPT:
   A. Transportation and handling.                     B. Assessment of market potential,
4. Integrated logistics support (ILS):
   A. Focuses on prime equipment performance requirements.
   B. Is a major subdivision of the Society of Logistics Engineers.
   C. Assures that the consumer will have a system that is properly supported during its life.
   D. None of the above.

5. Logistics decisions about inventory, transportation, and warehouse should be BEST related to which of the following?
   A. The globalization of markets.
   B. The changing government infrastructure.
   C. Structural changes in competition and market organization.
   D. Customer service requirements.
6. Transporting milk and dairy products from farms in Wisconsin throughout the Midwest is an example of what type of utility?

I. Form.
II. Possession.
III. Place.
IV. Time.

A. II  B. II, III  C. III  D. All of the Above.
Performance Check.

7. Inventory as a percent of GNP has generally been declining in recent years. Which factor is responsible?

   I. Reduction and elimination of unnecessary levels of inventory.
   II. Improved transportation service and efficiencies.
   III. Increases in inventory turnover rates.
   IV. Improvement in communications and information technology.

   A. I, III  
   B. II, III  
   C. II, III, IV  
   D. All of the above.

8. Which effect does a logistics facility location have on a firm's transportation costs, service levels, and inventory costs?

   A. Direct.  
   B. Indirect.  
   C. Converse.  
   D. Inverse.
9. Fierce competition in today’s global markets, the introduction of products with short life cycles, the extremely fast opening and closing of windows of opportunity, and the heightened expectation of customers have forced business enterprises to invest in and focus more attention on the following, along with techniques to manage it:

A. Supply chains.                        B. Transport technologies.
C. The firm’s financing.                  D. Competitive response.

10. Logistics support analysis (LSA):

A. Takes place as part of the evaluation and control phase of a system life-cycle.
B. Involves analyzing logistic support needs of a proposed system.
C. Is an informal or unstructured process that takes place every early in the life of a system.
D. Is done by outsider management consulting firms.
Performance Check.

Solution.

1 2 3 4 5 6 7 8 9 10
D A B C D C D A A B